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United States Department of Agriculture

Forest Service

North Central Forest Experiment Station

Resource Bulletin NC-172

Residential Fuelwood Consumption and Production in Wisconsin, 1994

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Manuscript approved for publication February 23, 1996
1996

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FOREWORD

This bulletin reports the results of a survey of residential fuelwood consumption and production in Wisconsin for a 1-year period encompassing the 1993/1994 heating season. Topics examined include the geographic distribution of residential fuelwood consumption and production within the State; the species of trees used for residential fuelwood; the types of wood-burning facilities used; the reasons for burning fuelwood; and the land, ownership, and tree classes from which fuelwood was produced. Such detailed information is necessary for intelligent planning and decision making in wood procurement, forest resource management, forest industry development, and forest research.

Special thanks are given to the Wisconsin households and loggers who supplied information for this survey. Their cooperation is greatly appreciated.

The Wisconsin Department of Natural Resources and its contractors are acknowledged for their cooperation and diligence in phoning and questioning the survey respondents. The Wisconsin Department of Administration, Division of Energy and Intergovernmental Relations, is also acknowledged for funding the data collection phase of this survey.

In this bulletin, consumption refers to the volume of fuelwood burned by Wisconsin's households, regardless of the source of the fuelwood (roundwood, wood residues from primary or secondary manufacturing, scrap or waste wood products, etc.). Production refers only to the volume of roundwood harvested to supply Wisconsin's wood-burning households. This report *does not* include information about harvesting for industrial fuelwood. Such information is included in reports covering wood use by primary processing plants.

Row and column data of tables may not sum due to rounding, but data in each table cell are accurately displayed.

Residential Fuelwood Consumption and Production in Wisconsin, 1994

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CONSUMPTION

- About one in four households burned wood in 1994; an equivalent proportion was expected to burn wood in 1995 (table 1).
- About one in three households burned wood in the Northeastern and Northwestern Survey Units (fig. 1) in 1994, while only about one in five households burned wood in the other Units.
- In 1994, more than 20,000 households planned to install wood-burning facilities. One-sixth of the installations will be new; the rest will be replacement or supplemental units for households already engaged in wood burning.
- On average, each of Wisconsin's wood-burning households burned 2.2 cords of fuelwood in 1994, for a total consumption of about 944 thousand cords (table 2).
- Pleasure was the most popular reason for burning wood in the State's two most populated Survey Units, the Southeastern and Central Units, while primary or secondary home heating was the primary reason for burning wood in the other, more rural, Units.

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Terry Mace, Forest Product Specialist, received a B.S. degree in forest product utilization from the University of Idaho. He joined the Wisconsin Department of Natural Resources in December 1980 in his current position.

- Overall, pleasure and secondary home heat were the most popular reasons for burning fuelwood in 1994.
- On average, households that burned wood for pleasure consumed about half a cord of fuelwood, only a fraction of the volume consumed by households that heated with wood.
- As a result, nine-tenths of the fuelwood was consumed for home-heating purposes in 1994; more than half was consumed for primary home heating alone (table 2 and fig. 2).
- Fireplaces were the most popular type of wood-burning facility used by Wisconsin households in 1994 (table 3). This was especially true for the more urban Survey Units where households burned wood primarily for pleasure.
- In contrast, furnaces and wood stoves were the most popular types of wood-burning facilities used in the other, more rural, Units, where households burned wood mainly for home heating purposes.
- About two-thirds of households that burned wood in fireplaces did so for pleasure, while over 90 percent of households that burned wood in wood stoves, and all of those that burned wood in furnaces, did so for home-heating purposes (table 4).
- As a result, almost three-quarters of all fuelwood consumed in 1994 was burned in furnaces and wood stoves, much more than was burned in the far more numerous fireplaces (fig. 3).
- In 1994, three-quarters of Wisconsin's wood burners had burned wood for at least 5 years (table 5).

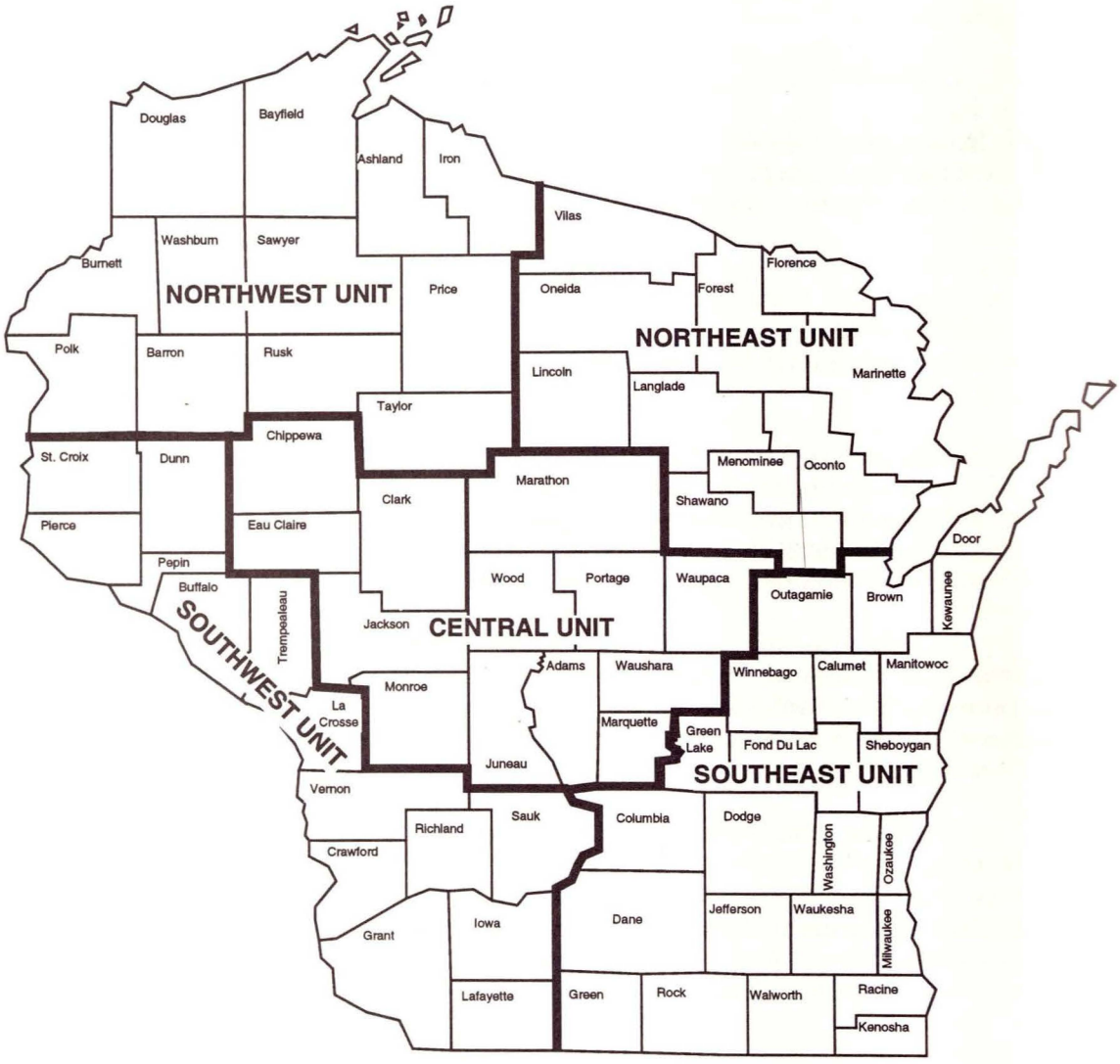

Figure 1.—*Forest Survey Units in Wisconsin, 1994.*

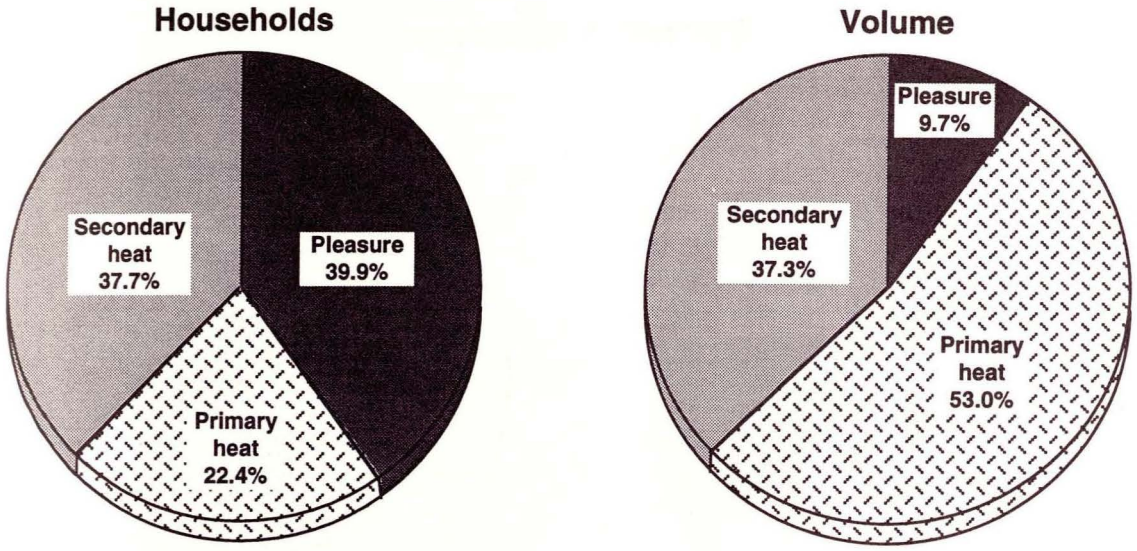

Figure 2.—*Distribution of residential fuelwood consumption by reason for burning, Wisconsin, 1994.*

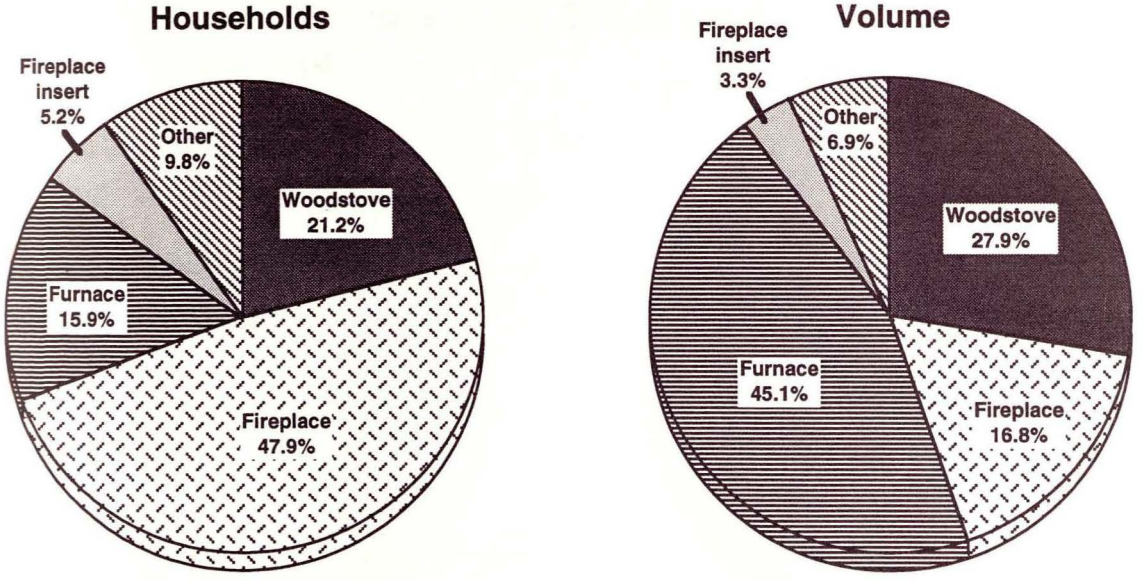

Figure 3.—*Distribution of residential fuelwood consumption by wood-burning facility, Wisconsin, 1994.*

- These veteran wood burners were more likely to burn wood as a primary heat source (fig. 4), and consequently burned 83 percent of all fuelwood consumed in 1994.
- Almost all of the fuelwood burned in 1994 was consumed at primary residences (table 6).
- Almost all of the fuelwood burned came from roundwood, but about 13 percent of the households relied on wood residues or wood pellets for all or part of their fuelwood needs in 1994 (table 7).
- Two main species—oak and maple—accounted for seven-tenths of all volume burned; oak alone accounted for half of total consumption (table 8).
- Close to three-fifths of Wisconsin's wood-burning households cut all or part of the fuelwood they burned in 1994 (table 9).
- In total, almost two-thirds of the volume burned in 1994 was cut by residents of wood-burning households. Most of the remaining volume, 28 percent of total consumption, was purchased (fig. 5).

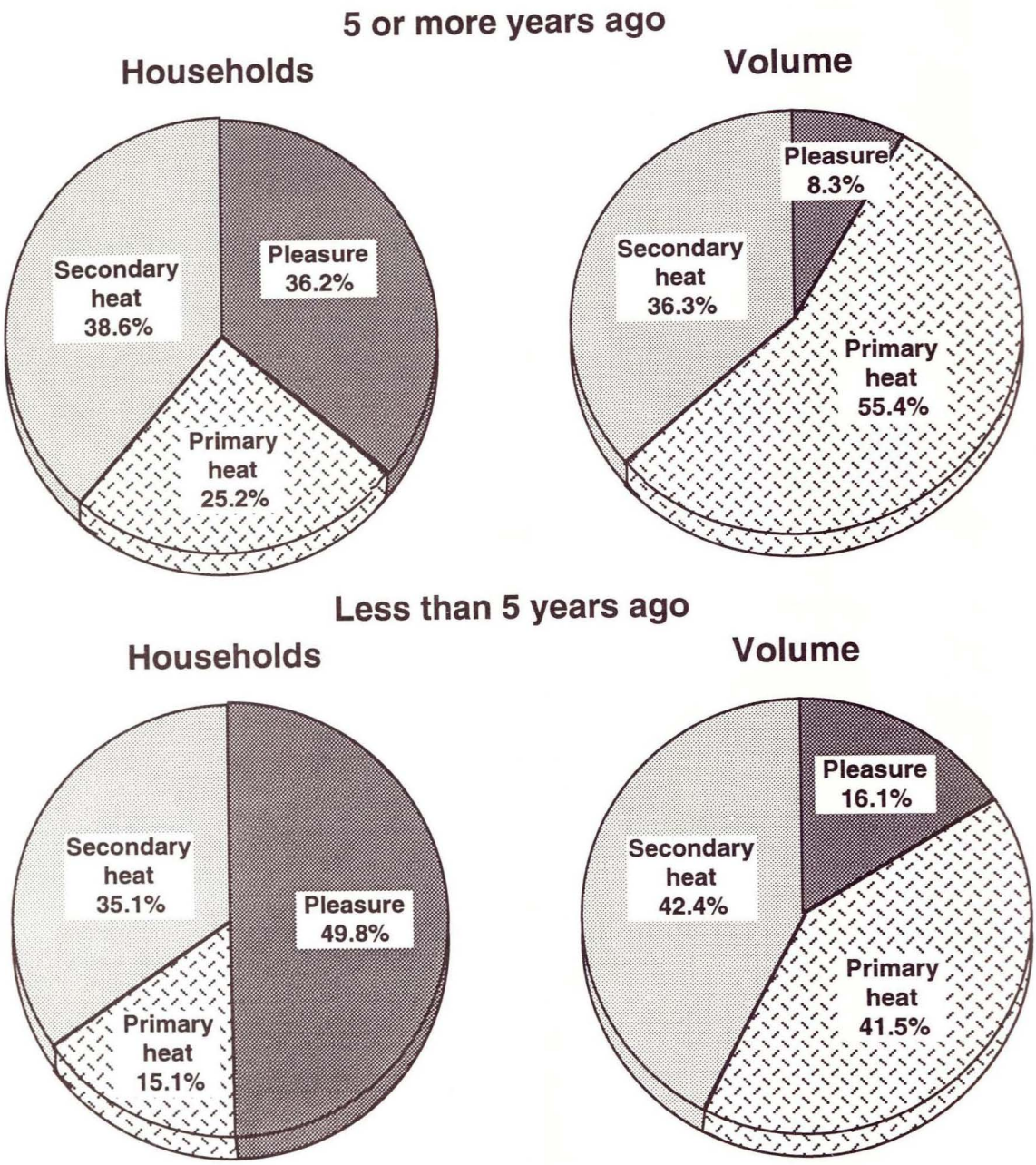

Figure 4.—*Distribution of residential fuelwood consumption by reason for burning and year first burned wood, Wisconsin, 1994.*

- Purchased wood was most frequently delivered in cords of stove-length wood (table 10). Sixteen-inch wood was most common, but 24-inch wood was also popular.

- Eight-foot wood was also popular, especially in the Northeastern and Northwestern Units of the State, but its use as fuelwood probably indicates a diversion from the wood supply of the State's other primary wood-using industries.

PRODUCTION

- In 1994, just over 1 million cords of roundwood fuelwood were cut in Wisconsin to meet the State's current and future residential fuelwood demands (table 11).

- Although still sizable, fuelwood production in Wisconsin has fallen by 47 percent since 1981, the survey year that captured the resurgence in residential fuelwood use

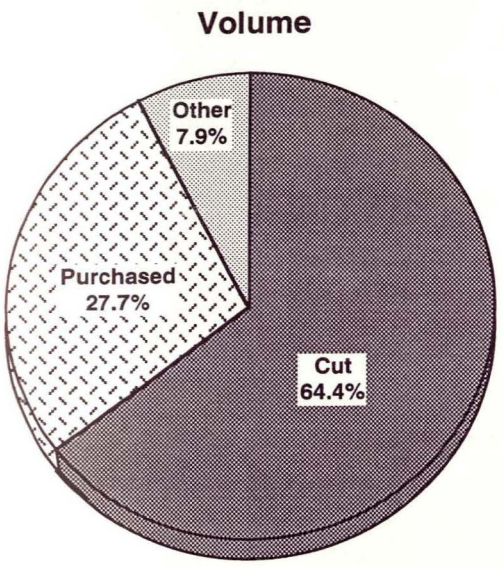

Figure 5.—*Distribution of residential fuelwood consumption by method of procurement, Wisconsin, 1994.*

caused by the energy crisis of the 1970's. As a result of Wisconsin homeowners once again abandoning wood fuel in favor of fossil-based energy for home heating as they did during the first half of the century, the State's production of residential fuelwood is returning to pre-energy crisis levels (fig. 6).

- Members of wood-burning households cut three-quarters of the 1994 production; the remainder was commercially harvested to supply the State's residential fuelwood market.

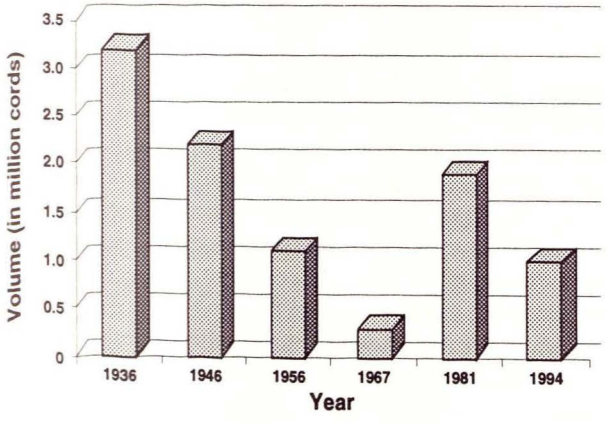

Figure 6.—*Residential fuelwood production in Wisconsin, 1936-1994.*

- Essentially all of the commercially produced fuelwood was cut from forest land sources, predominantly from live trees. In contrast, residential cutters were far more reliant upon dead trees from forest land sources.

- Overall, more than nine-tenths of fuelwood produced was harvested from forest land sources, mainly from dead trees. The remainder was cut from a variety of nonforest land sources (table 12 and fig. 7).

- Two main species—oak and maple—accounted for two-thirds of the fuelwood cut; oak alone accounted for half of the total (tables 13, 14, 15).

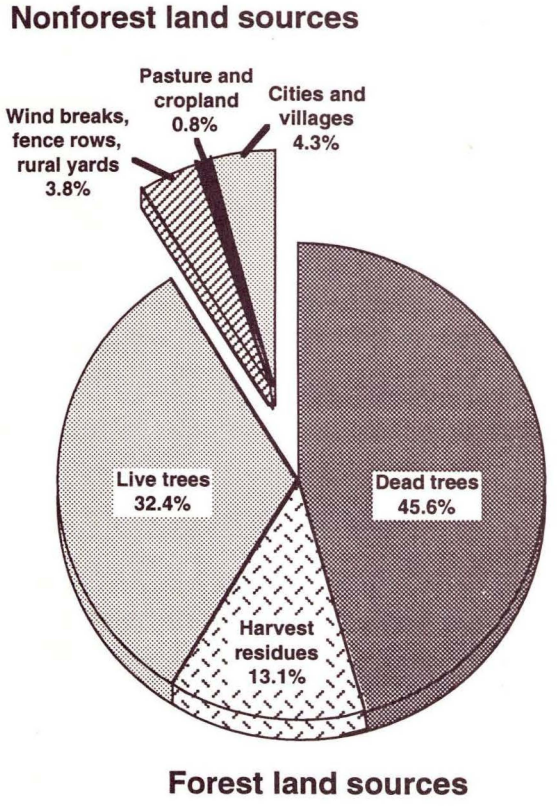

Figure 7.—*Distribution of residential fuelwood production by source of material, Wisconsin, 1994.*

- Private lands supplied nine-tenths of all fuelwood harvested in 1994. Most of the remainder was cut from public lands, primarily county/municipal lands (tables 16, 17).

- In 1994, only one quarter of all fuelwood produced was cut from growing-stock portions of live timberland trees (tables 18, 19 and fig. 8). As a consequence, the impact of residential fuelwood production on the growing-stock inventory of Wisconsin, the traditional supply source of the State's primary forest products industry, is relatively small and diminishing as residential fuelwood use declines in popularity.

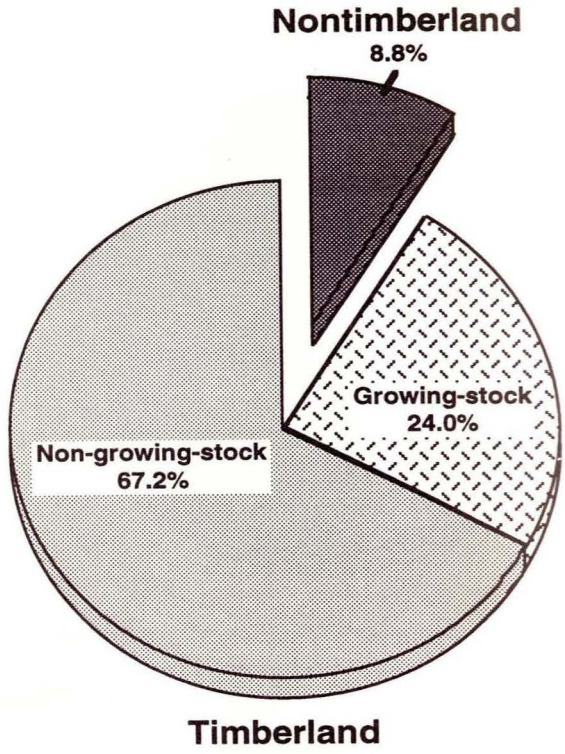

Figure 8.—*Distribution of timber removals associated with residential fuelwood production, Wisconsin, 1994.*

APPENDIX

STUDY METHODS

Data for this publication were collected by a telephone survey conducted during spring/summer 1994 by the Wisconsin Department of Natural Resources and its contractors. The telephone survey sampled Wisconsin households and commercial producers, using formal questionnaires prepared by the North Central Forest Experiment Station and approved by the Federal Office of Management and Budget.

Residential Households

The sampled universe encompassed all households in Wisconsin with telephones. A total sample size of 2,436 households was selected based on funding available and a desired standard error of less than ± 10 percent statewide at one standard deviation. The State was stratified into eight sampling strata based on Forest Survey Units and population densities within counties (fig. 9).

The total number of samples was disproportionally allocated to each stratum based on the number of households and the expected variation in fuelwood production in each stratum. The strata samples were proportionally distributed across the counties in each stratum based on the number of households in each county. The county samples were evenly distributed across the three-digit telephone exchanges in each county. A random list of telephone numbers was generated for each county using all listed three-digit phone exchanges. One call was placed (whether successful or unsuccessful) to each of the random telephone numbers until the necessary number of residential households within each exchange and county was contacted. About 1 in 400 households were sampled in strata 4 and 5, and about 1 in 800 households were sampled in the rest of the strata. Stratum sample responses were expanded to population estimates of total fuelwood use based on these sample rates.

Figure 9.—*Sampling strata in Wisconsin, 1994.*

Commercial Producers

To estimate the volume of fuelwood produced for sale to dealers or residential households, the Wisconsin Department of Natural Resources compiled a list of active loggers within each county of the State, and randomly selected 10 percent of the loggers in each county to be sampled. A total of 168 loggers were canvassed about their production of residential fuelwood, using a formal questionnaire similar to that used for households.

Completed questionnaires were sent to the North Central Forest Experiment Station for editing and processing. Some respondents did not know the tree species cut or burned for fuel, except in general terms such as mixed hardwoods. As part of the processing, general species groupings were prorated to individual species specifically identified as being harvested or burned in a sampling stratum and Forest Survey Unit.

SAMPLING ERROR

All the reported figures are estimates based on sampling procedures that are designed to give accurate estimates of residential fuelwood consumption and production. A measure of reliability of these figures is given by sampling errors. This sampling error means that the

chances are two out of three that the results for the sample differ by no more than the amount indicated from the results that would have been obtained if a complete census of all households and commercial producers had been made. Sampling errors for estimates of residential fuelwood consumption and production in Wisconsin are shown below:

Stratum	Consumption (Cords)	Error (Percent)	Production (Cords)	Error (Percent)
1	112,660	14.4	86,686	23.3
2	38,194	31.7	27,929	42.8
3	39,701	29.8	19,823	37.1
4	171,379	14.2	117,910	20.0
5	176,219	14.8	134,100	19.3
6	118,298	24.7	130,510	27.6
7	142,249	15.5	158,955	20.4
8	145,061	19.3	104,226	24.7
Residential households	943,762	6.7	780,139	8.9
Commercial producers	—	—	242,410	17.5
State total	943,762	6.7	1,022,549	8.0

STUDY LIMITATIONS

This study reports both the consumption and production of residential fuelwood in Wisconsin for a 1-year period ending at the time of the telephone survey, essentially encompassing the 1993/1994 burning season, but dated 1994 for reporting purposes. Consumption refers to the volume of fuelwood burned by Wisconsin's wood-burning households, regardless of the source of the fuelwood (roundwood, wood residues from primary or secondary manufacturing, scrap or waste wood products, etc.). Production, on the other hand, refers only to the volume of roundwood harvested to supply Wisconsin's wood-burning households. Due to these definition differences, as well as seasoning time, leftover fuelwood inventories from previous years, gift or free wood, interstate wood movement, fluctuating participation in wood burning, and use of wood residues and wood wastes, estimates of fuelwood production and consumption totals should not be expected to match in a given year.

Additionally, production does not include fuelwood produced from wood residues generated at primary wood-using mills (such as sawmills and veneer mills), fuelwood produced from roundwood for industrial consumption, fuelwood produced from wood residues generated at secondary wood-using mills (such as millwork plants and furniture plants), or fuelwood produced from waste wood products. However, fuelwood produced from primary mill residues and fuelwood produced for industrial consumption are captured in other studies. And although fuelwood production from secondary mill residues and waste secondary wood products are beyond the scope of Forest Inventory and Analysis duties, part of this volume is captured in the consumption portion of the residential fuelwood studies.

Households without telephones were not sampled. To compensate for this omission, sample responses from households with phones were assumed representative of the relatively small number of households without phones, and were expanded across all existing households in Wisconsin. Study results may be slightly biased if fuelwood consumption or production per household differs significantly in quantity or sources between phoneless households and households with phones.

To assess the impacts of fuelwood harvesting on the State's forest inventory from telephone

survey responses, reported fuelwood harvests from "woodland areas outside of city or village limits" were assumed to be the same as forest land harvests, and all forest land harvests were assumed to be timberland harvests.

DEFINITION OF TERMS

Central stem.—The portion of a tree between a 1-foot stump and the minimum 4.0-inch top diameter outside bark or the point where the central stem breaks into limbs.

Commercial producers.—Commercial fuelwood operators. Those who harvest fuelwood to sell to dealers or consumers. Includes loggers who harvest fuelwood along with saw logs and other products.

Commercial species.—Tree species presently or prospectively suitable for industrial wood products. (Note: Excludes species of typically small size, poor form, or inferior quality such as hophornbeam, Osage-orange, and redbud.)

Cord (standard fuelwood).—A pile of logs 4x4x8 feet (128 cubic feet including air space and bark). A standard cord of fuelwood contains 70 cubic feet of wood and 58 cubic feet of bark and air space.

Cull removals.—Net volume of rough and rotten trees, plus the net volume in sections of the central stem of growing-stock trees that do not meet regional merchantability standards, harvested for roundwood products.

Dead removals.—Net volume of dead trees harvested for roundwood products.

Diameter at breast height (d.b.h.).—The outside bark diameter at 4.5 feet above the forest floor on the uphill side of the tree. For determining breast height, the forest floor includes the duff layer that may be present, but does not include unincorporated woody debris that may rise above the ground line.

Forest land.—Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use. (Note: Stocking is measured by comparing specified standards with basal area and/or number of trees, age or size, and spacing.) The minimum area for classification of forest land is 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a crown width of at least 120 feet to qualify as forest land. Unimproved roads and trails, streams, or other bodies of water or clearings in forest areas shall be classed as forest if less than 120 feet wide.

Fuelwood consumption.—The fuelwood burned by residential households.

Fuelwood production.—The volume of roundwood harvested to supply residential households.

Growing-stock removals.—The growing-stock volume removed from the timberland inventory by harvesting roundwood products. (Note: Includes sawtimber removals, poletimber removals, and logging residues.)

Growing-stock tree.—A live timberland tree of commercial species that meets specified standards of size, quality, and merchantability. (Note: Excludes rough, rotten, and dead trees.)

Growing-stock volume.—Net volume of growing-stock trees 5.0 inches d.b.h. and over, from 1 foot above the ground to a minimum 4.0-inch top diameter outside bark of the central stem or to the point where the central stem breaks into limbs.

Hardwoods.—Dicotyledonous trees, usually broad-leaved and deciduous.

Harvest residues.—The total net volume of unused portions of trees cut or killed by logging. (Note: Includes both logging residues and logging slash.)

Limbwood removals.—Net volume of all portions of a tree other than the central stem, (including forks, large limbs, tops, and stumps) harvested for roundwood products.

Logging residue.—The net volume of unused portions of the merchantable central stem of growing-stock trees cut or killed by logging.

Logging slash.—The net volume of unused portions of the unmerchantable (non-growing-stock) sections of trees cut or killed by logging.

Merchantable sections.—Sections of the central stem of growing-stock trees that meet either pulpwood or saw-log specifications.

Net volume.—Gross volume less deductions for rot, sweep, or other defects affecting use for roundwood products.

Noncommercial species.—Tree species of typically small size, poor form, or inferior quality that normally do not develop into trees suitable for industrial roundwood products.

Nonforest land.—Land that has never supported forests, and land formerly forested where use for timber management is precluded by development for other uses. (Note: Includes areas used for crops, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, powerline clearings of any width, and 1- to 39.9-acre areas of water classified by the Bureau of the Census as land. If intermingled in forest areas, improved roads and nonforest strips must be more than 120 feet wide and more than 1 acre to qualify as nonforest land.)

Nonforest land removals.—Net volume of trees on nonforest lands harvested for roundwood products.

Nontimberland.—The same as nonforest land in this report.

Poletimber.—A growing-stock tree at least 5.0 inches d.b.h. but smaller than sawtimber size (9.0 inches d.b.h. for softwoods, 11.0 inches d.b.h. for hardwoods).

Poletimber removals.—Net volume in the merchantable central stem of poletimber trees harvested for roundwood products.

Primary wood-using mills.—Mills receiving roundwood or chips from roundwood for processing into primary wood products (lumber, veneer, wood pulp, etc.).

Rotten tree.—A tree that does not meet regional merchantability standards because of excessive unsound cull.

Rough tree.—A tree that does not meet regional merchantability standards because of excessive sound cull. Includes noncommercial tree species.

Roundwood.—Logs, bolts, or other round sections cut from trees (including chips from roundwood).

Sapling.—A live tree between 1.0 and 5.0 inches d.b.h.

Sapling removals.—Net volume in saplings harvested for roundwood products.

Saw-log portion.—That portion of the central stem of sawtimber trees between the stump and the saw-log top.

Saw-log top.—The point on the central stem of sawtimber trees above which a saw log cannot be produced. The minimum saw-log top is 7 inches diameter outside bark (d.o.b.) for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber removals.—The net volume in the merchantable central stem of sawtimber trees harvested for roundwood products. (Note: Includes the saw-log and upper-stem portions of sawtimber trees.)

Sawtimber tree.—A growing-stock tree containing at least a 12-foot saw log or two noncontiguous saw logs 8 feet or longer, and meeting regional specifications for freedom from defect. Softwoods must be at least 9.0 inches d.b.h. and hardwoods must be at least 11.0 inches d.b.h.

Secondary wood-using mills.—Mills receiving primary wood products for manufacture into secondary wood products (furniture, cabinets, etc.).

Softwoods.—Coniferous trees, usually evergreen, having needles or scale-like leaves.

Tree.—A woody plant usually having one or more perennial stems, a more or less definitely formed crown of foliage, and a height of at least 12 feet at maturity.

Timberland.—Forest land that is producing, or is capable of producing, in excess of 20 cubic feet per acre per year of industrial roundwood products under natural conditions, is not withdrawn from timber utilization by statute or administrative regulation, and is not associated with urban or rural development. In this report, all forest land removals were assumed to be timberland removals.

Upper stem portion.—That portion of the central stem of sawtimber trees between the saw-log top and the minimum top diameter of

4.0 inches outside bark or to the point where the central stem breaks into limbs.

Wood residues.—Includes woody material (bark, coarse, fine, etc.) generated at primary wood-using mills, woody material (sawdust, scrap, trim, wood flour, etc.) generated at secondary wood-using plants, and waste secondary wood products.

COMMON AND SCIENTIFIC NAMES OF TREE SPECIES MENTIONED

SOFTWOODS

Cedar
- Eastern redcedar ..... *Juniperus virginiana*
- Northern white-cedar ..... *Thuja occidentalis*

Fir
- Balsam fir ..... *Abies balsamea*

Pine
- Jack pine ..... *Pinus banksiana*
- Red pine ..... *Pinus resinosa*
- White pine ..... *Pinus strobus*
- Scotch pine ..... *Pinus sylvestris*

Spruce
- Norway spruce ..... *Picea abies*
- White spruce ..... *Picea glauca*
- Black spruce ..... *Picea mariana*

HARDWOODS

Ash
- White ash ..... *Fraxinus americana*
- Black ash ..... *Fraxinus nigra*
- Green ash ..... *Fraxinus pennsylvanica*

Aspen
- Balsam poplar ..... *Populus balsamifera*
- Bigtooth aspen ..... *Populus grandidentata*
- Quaking aspen ..... *Populus tremuloides*

Basswood
- American basswood ..... *Tilia americana*

Beech ..... *Fagus grandifolia*

Birch
- Yellow birch ..... *Betula alleghaniensis*
- River birch ..... *Betula nigra*
- Paper birch ..... *Betula papyrifera*

Boxelder ..... *Acer negundo*

Cherry
- Black cherry ..... *Prunus serotina*

Cottonwood
- Eastern cottonwood ..... *Populus deltoides*

Elm
- American elm ..... *Ulmus americana*
- Slippery elm ..... *Ulmus rubra*
- Rock elm ..... *Ulmus thomasii*

Hickory
- Bitternut hickory ..... *Carya cordiformis*
- Pignut hickory ..... *Carya glabra*
- Shagbark hickory ..... *Carya ovata*

Locust
- Honeylocust ..... *Gleditsia triacanthos*
- Black locust ..... *Robinia pseudoacacia*

Maple
- Black maple ..... *Acer nigrum*
- Red maple ..... *Acer rubrum*
- Silver maple ..... *Acer saccharinum*
- Sugar maple ..... *Acer saccharum*

Oak
- Red oak
  - Northern pin oak ..... *Quercus ellipsoidalis*
  - Northern red oak ..... *Quercus rubra*
  - Black oak ..... *Quercus velutina*
- White oak
  - White oak ..... *Quercus alba*
  - Swamp white oak ..... *Quercus bicolor*
  - Bur oak ..... *Quercus macrocarpa*

Walnut
- Black walnut ..... *Juglans nigra*

Willow
- Black willow ..... *Salix nigra*

Noncommercial species

Apple ..... *Malus* spp.

Cherry
- Pin cherry ..... *Prunus pensylvanica*
- Choke cherry ..... *Prunus virginiana*

Ironwood ..... *Ostrya virginiana*

TABLE TITLES

Table 1.—Household possession and use of wood-burning facilities by Forest Survey Unit, Wisconsin, 1994

Table 2.—Residential fuelwood consumption by reason for burning and Forest Survey Unit, Wisconsin, 1994

Table 3.—Residential fuelwood consumption by type of wood-burning facility and Forest Survey Unit, Wisconsin, 1994

Table 4.—Residential fuelwood consumption by type of wood-burning facility and reason for burning, Wisconsin, 1994

Table 5.—Residential fuelwood consumption by reason for burning and year first burned wood, Wisconsin, 1994

Table 6.—Residential fuelwood consumption by place of consumption, Wisconsin, 1994

Table 7.—Residential fuelwood consumption by type of fuelwood, Wisconsin, 1994

Table 8.—Residential fuelwood consumption by species group and Forest Survey Unit, Wisconsin, 1994

Table 9.—Residential fuelwood consumption by method of procurement and Forest Survey Unit, Wisconsin, 1994

Table 10.—Residential consumption of purchased fuelwood by size of wood, Wisconsin, 1994

Table 11.—Residential fuelwood production from roundwood by type of producer and source of material, Wisconsin, 1994

Table 12.—Residential fuelwood production from roundwood by Forest Survey Unit and source of material, Wisconsin, 1994

Table 13.—Residential fuelwood production from roundwood by species group and source of material, Wisconsin, 1994

Table 14.—Residential fuelwood production from roundwood by species group and Forest Survey Unit, Wisconsin, 1994

Table 15.—Residential fuelwood production from roundwood by species group and ownership class, Wisconsin, 1994

Table 16.—Residential fuelwood production from roundwood by ownership class and source of material, Wisconsin, 1994

Table 17.—Residential fuelwood production from roundwood by ownership class and Forest Survey Unit, Wisconsin, 1994

Table 18.—Distribution of timber removals associated with residential fuelwood production by Forest Survey Unit, Wisconsin, 1994

Table 19.—Distribution of timber removals associated with residential fuelwood production by species group, Wisconsin, 1994

Table 1. -- Household possession and use of wood-burning facilities by Forest Survey Unit, Wisconsin, 1994

(In number of households)

Forest Survey Unit	Households	Households burning wood in 1994	Households planning to burn wood in 1995	Households planning to install wood-burning facilities
Northeastern	84,406	31,976	31,123	2,132
Northwestern	93,943	31,830	31,340	2,938
Central	215,012	46,832	44,654	2,178
Southwestern	165,177	34,515	33,630	885
Southeastern	1,263,580	281,060	271,933	11,998
Total	1,822,118	426,213	412,680	20,131

Table 2. -- Residential fuelwood consumption by reason for burning and Forest Survey Unit, Wisconsin, 1994

Forest Survey Unit and reason for burning	Number of households	Volume (Cords)	Average (Cords/ household)
Northeastern			
Pleasure	4,263	3,704	0.87
Primary heat	14,069	123,870	8.80
Secondary heat	13,643	48,645	3.57
Total	31,976	176,219	5.51
Northwestern			
Pleasure	4,897	4,019	0.82
Primary heat	13,222	114,611	8.67
Secondary heat	13,711	52,749	3.85
Total	31,830	171,379	5.38
Central			
Pleasure	18,515	10,383	0.56
Primary heat	13,069	41,045	3.14
Secondary heat	15,248	66,870	4.39
Total	46,832	118,298	2.53
Southwestern			
Pleasure	3,540	1,617	0.46
Primary heat	15,045	93,245	6.20
Secondary heat	15,930	50,200	3.15
Total	34,515	145,061	4.20
Southeastern			
Pleasure	138,873	71,405	0.51
Primary heat	40,190	127,728	3.18
Secondary heat	101,997	133,671	1.31
Total	281,060	332,805	1.18
All Units			
Pleasure	170,088	91,128	0.54
Primary heat	95,596	500,498	5.24
Secondary heat	160,530	352,135	2.19
Total	426,213	943,762	2.21

Table 3. -- Residential fuelwood consumption by type of wood-burning facility and Forest Survey Unit, Wisconsin, 1994

Forest Survey Unit and wood-burning facility	Number of households	Volume (Cords)	Average (Cords/ household)
Northeastern			
Stove	9,380	56,213	5.99
Furnace	10,659	81,698	7.66
Fireplace insert	2,132	8,314	3.90
Fireplace	8,101	17,972	2.22
Combinations	1,705	12,021	7.05
Total	31,976	176,219	5.51
Northwestern			
Stove	7,835	31,393	4.01
Furnace	15,181	121,317	7.99
Fireplace insert	1,469	3,795	2.58
Fireplace	6,366	14,353	2.25
Fire pit	490	32	0.07
Combinations	490	490	1.00
Total	31,830	171,379	5.38
Central			
Stove	8,713	19,792	2.27
Furnace	13,069	70,401	5.39
Fireplace insert	1,089	261	0.24
Fireplace	21,782	24,031	1.10
Fire pit	1,089	1,634	1.50
Combinations	1,089	2,178	2.00
Total	46,832	118,298	2.53
Southwestern			
Stove	15,045	47,248	3.14
Furnace	13,275	83,625	6.30
Fireplace insert	885	2,789	3.15
Fireplace	4,425	5,204	1.18
Combinations	885	6,195	7.00
Total	34,515	145,061	4.20
Southeastern			
Stove	49,159	108,228	2.20
Furnace	15,759	68,682	4.36
Fireplace insert	16,530	15,737	0.95
Fireplace	163,553	97,192	0.59
Fire pit	20,112	14,573	0.72
Combinations	15,946	28,393	1.78
Total	281,060	332,805	1.18
All Units			
Stove	90,132	262,875	2.92
Furnace	67,943	425,723	6.27
Fireplace insert	22,105	30,896	1.40
Fireplace	204,227	158,752	0.78
Fire pit	21,691	16,239	0.75
Combinations	20,115	49,277	2.45
Total	426,213	943,762	2.21

Table 4. -- Residential fuelwood consumption by type of wood-burning facility and reason for burning, Wisconsin, 1994

	All reasons		Reason for burning					
			Pleasure		Primary heat		Secondary heat	
Type of facility	Number of households	Volume (Cords)	Number of nouseholds	Volume (Cords)	Number of households	Volume (Cords)	Number of households	Volume (Cords)
Stove	90,132	262,875	7,718	6,605	30,139	119,435	52,275	136,835
Furnace	67,943	425,723	-	-	48,673	326,318	19,270	99,405
Fireplace insert	22,105	30,896	6,517	4,695	2,299	8,687	13,290	17,514
Fireplace	204,227	158,752	128,958	59,758	6,177	14,050	69,092	84,944
Fire pit	21,691	16,239	21,691	16,239	-	-	-	-
Combinations	20,115	49,277	5,204	3,832	8,308	32,007	6,603	13,438
Total	426,213	943,762	170,088	91,128	95,596	500,498	160,530	352,135

Table 5. -- Residential fuelwood consumption by reason for burning and year first burned wood, Wisconsin, 1994

Reason for burning and year first burned wood	Number of households	Volume (Cords)	Average (Cords/ household)
Pleasure			
Last year	18,842	8,844	0.47
2 years ago	10,646	4,250	0.40
3 years ago	15,274	6,188	0.41
4 years ago	12,627	6,475	0.51
5 or more years ago	112,698	65,371	0.58
Total	170,088	91,128	0.54
Primary heat			
Last year	7,600	20,093	2.64
2 years ago	3,806	19,763	5.19
3 years ago	1,813	8,113	4.47
4 years ago	4,190	18,401	4.39
5 or more years ago	78,186	434,128	5.55
Total	95,596	500,498	5.24
Secondary heat			
Last year	12,770	14,854	1.16
2 years ago	6,440	13,432	2.09
3 years ago	7,713	10,492	1.36
4 years ago	13,587	28,895	2.13
5 or more years ago	120,019	284,462	2.37
Total	160,530	352,135	2.19
All reasons			
Last year	39,211	43,792	1.12
2 years ago	20,893	37,445	1.79
3 years ago	24,801	24,792	1.00
4 years ago	30,404	53,771	1.77
5 or more years ago	310,904	783,961	2.52
Total	426,213	943,762	2.21

Table 6. -- Residential fuelwood consumption by place of consumption, Wisconsin, 1994

Forest Survey Unit and place of consumption	Number of households	Volume consumed					Average (Cords/ household)
		Primary residence (Cords)	Secondary residence (Cords)	Other building (Cords)	Other[1] (Cords)	Total consumption (Cords)	
Northeastern							
Primary residence	29,844	169,113	-	-	-	169,113	5.67
Secondary residence	853	-	1,563	-	-	1,563	1.83
Other building	1,279	-	-	5,542	-	5,542	4.33
Total	31,976	169,113	1,563	5,542	-	176,219	5.51
Northwestern							
Primary residence	30,361	168,762	-	-	-	168,762	5.56
Secondary residence	1,469	-	2,617	-	-	2,617	1.78
Total	31,830	168,762	2,617	-	-	171,379	5.38
Central							
Primary residence	43,565	114,123	-	-	-	114,123	2.62
Secondary residence	1,089	-	1,634	-	-	1,634	1.50
Other building	1,089	-	-	1,089	-	1,089	1.00
Combination	1,089	1,307	-	145	-	1,452	1.33
Total	46,832	115,430	1,634	1,234	-	118,298	2.53
Southwestern							
Primary residence	30,975	140,229	-	-	-	140,229	4.53
Other building	3,540	-	-	4,832	-	4,832	1.37
Total	34,515	140,229	-	4,832	-	145,061	4.20
Southeastern							
Primary residence	207,385	255,156	-	-	-	255,156	1.23
Secondary residence	16,192	-	21,345	-	-	21,345	1.32
Other building	4,594	-	-	1,526	-	1,526	0.33
Other	7,525	-	-	-	5,620	5,620	0.75
Combination	45,365	39,856	6,418	1,668	1,215	49,158	1.08
Total	281,060	295,013	27,763	3,195	6,834	332,805	1.18
All Units							
Primary residence	342,130	847,384	-	-	-	847,384	2.48
Secondary residence	19,602	-	27,159	-	-	27,159	1.39
Other building	10,502	-	-	12,990	-	12,990	1.24
Other	7,525	-	-	-	5,620	5,620	0.75
Combination	46,454	41,163	6,418	1,813	1,215	50,610	1.09
Total	426,213	888,547	33,577	14,804	6,834	943,762	2.21

[1] Consumed at campsites.

Table 7. -- Residential fuelwood consumption by type of fuelwood, Wisconsin, 1994

Forest Survey Unit and type of fuelwood	Number of households	Volume consumed				Average (Cords/ household)
		Roundwood (Cords)	Wood residues (Cords)	Wood pellets (Cords)	Total consumption (Cords)	
Northeastern						
Roundwood	30,697	167,835	-	-	167,835	5.47
Wood residues	426	-	2,132	-	2,132	5.00
Combination	853	5,116	1,137	-	6,253	7.33
Total	31,976	172,951	3,269	-	176,219	5.51
Northwestern						
Roundwood	29,382	167,088	-	-	167,088	5.69
Combination	2,448	2,642	1,649	-	4,291	1.75
Total	31,830	169,730	1,649	-	171,379	5.38
Central						
Roundwood	34,852	90,843	-	-	90,843	2.61
Wood pellets	1,089	-	-	1,452	1,452	1.33
Combination	10,891	17,034	8,968	-	26,002	2.39
Total	46,832	107,877	8,968	1,452	118,298	2.53
Southwestern						
Roundwood	27,435	110,727	-	-	110,727	4.04
Wood residues	6,195	-	32,564	-	32,564	5.26
Combination	885	885	885	-	1,770	2.00
Total	34,515	111,612	33,449	-	145,061	4.20
Southeastern						
Roundwood	247,224	292,435	-	-	292,435	1.18
Wood residues	6,326	-	5,144	-	5,144	0.81
Combination	27,510	24,507	10,719	-	35,226	1.28
Total	281,060	316,942	15,863	-	332,805	1.18
All Units						
Roundwood	369,590	828,928	-	-	828,928	2.24
Wood residues	12,947	-	39,840	-	39,840	3.08
Wood pellets	1,089	-	-	1,452	1,452	1.33
Combination	42,587	50,183	23,358	-	73,541	1.73
Total	426,213	879,112	63,198	1,452	943,762	2.21

Table 8. -- Residential fuelwood consumption by species group and Forest Survey Unit, Wisconsin, 1994

(In cords)

Species group	All Units	Forest Survey Unit				
		Northeastern	Northwestern	Central	Southwestern	Southeastern
Softwoods						
Fir	61	-	-	-	-	61
Cedar	629	-	-	-	-	629
Spruce	552	552	-	-	-	-
Pine	34,259	1,677	2,567	6,538	708	22,769
Total softwoods	35,502	2,230	2,567	6,538	708	23,459
Hardwoods						
Maple	170,066	65,124	60,133	4,316	10,037	30,456
Boxelder	6,301	-	-	-	1,099	5,202
Birch	80,362	26,370	18,917	1,945	8,564	24,566
Hickory	7,911	1,724	-	-	168	6,018
Beech	1,794	431	-	-	-	1,363
Ash	39,142	913	3,001	-	6,593	28,635
Locust	719	-	-	-	-	719
Walnut	4,381	-	-	-	4,381	-
Apple	660	-	-	-	-	660
Ironwood	2,769	-	-	-	-	2,769
Cottonwood	1,387	-	-	-	-	1,387
Aspen	35,925	13,366	7,242	816	6,386	8,114
Cherry	4,330	-	-	-	1,465	2,865
Oak	493,144	47,165	79,160	100,017	90,741	176,060
Willow	6,175	-	-	-	-	6,175
Basswood	5,296	3,858	359	-	-	1,079
Elm	47,898	15,039	-	4,666	14,919	13,275
Total hardwoods	908,260	173,989	168,813	111,760	144,353	309,345
All species	943,762	176,219	171,379	118,298	145,061	332,805

Table 9. -- Residential fuelwood consumption by method of procurement and Forest Survey Unit, Wisconsin, 1994

Forest Survey Unit and procurement method	Number of households	Volume purchased (Cords)	Volume cut (Cords)	Volume other[1] (Cords)	Total consumption (Cords)	Average (Cords/ household)
Northeastern						
Buy[1]	8,953	31,032	-	979	32,011	3.58
Cut	17,907	-	114,222	-	114,222	6.38
Cut and buy[1]	5,116	12,165	17,323	497	29,986	5.86
Total	31,976	43,197	131,546	1,477	176,219	5.51
Northwestern						
Buy[1]	12,242	53,569	-	5,240	58,810	4.80
Cut	14,691	-	89,626	-	89,626	6.10
Cut and buy[1]	4,897	7,673	13,695	1,576	22,944	4.69
Total	31,830	61,242	103,322	6,816	171,379	5.38
Central						
Buy[1]	16,337	35,705	-	6,744	42,449	2.60
Cut	20,693	-	50,817	-	50,817	2.46
Cut and buy[1]	9,802	2,505	15,834	6,693	25,032	2.55
Total	46,832	38,210	66,651	13,437	118,298	2.53
Southwestern						
Buy[1]	17,700	39,120	-	15,440	54,560	3.08
Cut	15,930	-	88,731	-	88,731	5.57
Cut and buy[1]	885	-	885	885	1,770	2.00
Total	34,515	39,120	89,616	16,325	145,061	4.20
Southeastern						
Buy[1]	124,716	64,304	-	25,710	90,014	0.72
Cut	120,352	-	188,464	-	188,464	1.57
Cut and buy[1]	35,991	15,797	27,828	10,702	54,327	1.51
Total	281,060	80,101	216,292	36,412	332,805	1.18
All Units						
Buy[1]	179,949	223,730	-	54,114	277,843	1.54
Cut	189,573	-	531,860	-	531,860	2.81
Cut and buy[1]	56,692	38,140	75,566	20,353	134,058	2.36
Total	426,213	261,869	607,426	74,467	943,762	2.21

[1] Includes gift wood, free wood, leftover wood, etc.

Table 10. -- Residential consumption of purchased fuelwood by size of wood, Wisconsin, 1994

Forest Survey Unit and size of wood purchased	Number of households	Volume (Cords)	Average (Cords/ household)
Northeastern			
16 inch	4,263	17,701	4.15
24 inch	1,705	6,694	3.93
4 foot	426	682	1.60
8 foot	4,690	13,829	2.95
Random length residues	853	2,771	3.25
Random length roundwood	426	1,520	3.57
Total	12,364	43,197	3.49
Northwestern			
16 inch	5,876	18,457	3.14
24 inch	979	5,299	5.41
8 foot	5,876	37,143	6.32
Random length roundwood	490	343	0.70
Total	13,222	61,242	4.63
Central			
16 inch	8,713	33,980	3.90
24 inch	1,089	272	0.25
8 foot	1,089	980	0.90
Random length residues	2,178	2,977	1.37
Total	13,069	38,210	2.92
Southwestern			
16 inch	4,425	10,666	2.41
24 inch	3,540	6,329	1.79
Random length residues	3,540	22,125	6.25
Total	11,505	39,120	3.40
Southeastern			
16 inch	76,133	46,931	0.62
24 inch	11,347	14,222	1.25
4 foot	834	417	0.50
6 foot	894	4,024	4.50
8 foot	2,933	8,650	2.95
Random length residues	5,553	4,319	0.78
Random length roundwood	2,867	1,539	0.54
Total	100,562	80,101	0.80
All Units			
16 inch	99,411	127,735	1.28
24 inch	18,661	32,816	1.76
4 foot	1,260	1,099	0.87
6 foot	894	4,024	4.50
8 foot	14,589	60,602	4.15
Random length residues	12,124	32,192	2.66
Random length roundwood	3,783	3,402	0.90
Total	150,722	261,869	1.74

Table 11. -- Residential fuelwood production from roundwood by type of producer and source of material, Wisconsin, 1994

(In cords)

Type of producer	All sources	Source of material					
		Cities and villages	Windbreaks, fencerows, rural yards	Pasture and cropland	Forest land		
					Standing live trees	Harvest residues	Dead trees
Residential	780,139	43,540	38,401	7,710	99,038	131,200	460,250
Commercial	242,410	-	-	655	233,101	2,533	6,121
Total	1,022,549	43,540	38,401	8,365	332,139	133,733	466,371

Table 12. -- Residential fuelwood production from roundwood by Forest Survey Unit and source of material, Wisconsin, 1994

(In cords)

Forest Survey Unit	All sources	Source of material					
		Cities and villages	Windbreaks, fencerows, rural yards	Pasture and cropland	Forest land		
					Standing live trees	Harvest residues	Dead trees
Northeastern	170,665	1,944	3,411	-	47,610	29,677	88,023
Northwestern	238,736	401	-	655	116,419	41,874	79,387
Central	253,319	13,224	6,535	2,178	94,899	14,597	121,887
Southwestern	128,727	-	1,770	5,531	42,440	17,430	61,555
Southeastern	231,103	27,971	26,685	-	30,772	30,155	115,519
Total	1,022,549	43,540	38,401	8,365	332,139	133,733	466,371

Table 13. -- Residential fuelwood production from roundwood by species group and source of material, Wisconsin, 1994

(In cords)

Species group	All sources	Source of material					
					Forest land		
		Cities and villages	Windbreaks, fencerows, rural yards	Pasture and cropland	Standing live trees	Harvest residues	Dead trees
Softwoods							
Fir	129	-	-	-	2	6	121
Cedar	3,881	2,754	-	-	107	-	1,020
Spruce	222	-	-	-	200	-	22
Pine	45,463	1,439	682	-	11,710	12,084	19,547
Total softwoods	49,694	4,193	682	-	12,018	12,091	20,711
Hardwoods							
Maple	191,608	10,234	3,122	233	79,409	32,222	66,387
Boxelder	11,448	59	5,942	-	1,169	1,085	3,193
Birch	72,469	3,054	1,379	63	20,292	12,284	35,397
Hickory	3,896	914	3	-	418	201	2,360
Beech	508	-	-	-	115	327	66
Ash	42,749	5,131	6,326	8	6,936	3,942	20,407
Locust	141	-	-	-	141	-	1
Walnut	5,046	-	-	-	1,546	121	3,380
Apple	619	467	2	-	31	53	66
Ironwood	2,582	78	14	-	145	171	2,174
Cottonwood	167	-	-	-	166	-	1
Aspen	73,739	3,162	786	22	34,217	5,597	29,954
Cherry	3,734	161	1,159	-	884	412	1,118
Oak	502,271	12,965	14,128	8,037	165,069	59,870	242,201
Willow	3,102	800	134	-	519	171	1,477
Basswood	3,715	59	10	1	1,459	185	2,000
Elm	55,060	2,262	4,713	-	7,605	5,002	35,478
Total hardwoods	972,855	39,347	37,719	8,365	320,120	121,643	445,660
All species	1,022,549	43,540	38,401	8,365	332,139	133,733	466,371

Table 14. -- Residential fuelwood production from roundwood by species group and Forest Survey Unit, Wisconsin, 1994

(In cords)

Species group	All Units	Forest Survey Unit				
		Northeastern	Northwestern	Central	Southwestern	Southeastern
Softwoods						
Fir	129	-	32	96	-	2
Cedar	3,881	5	-	179	-	3,697
Spruce	222	222	-	-	-	-
Pine	45,463	3,230	6,824	12,696	9,107	13,605
Total softwoods	49,694	3,457	6,857	12,970	9,107	17,304
Hardwoods						
Maple	191,608	59,702	65,452	40,028	10,362	16,065
Boxelder	11,448	62	2	35	1,846	9,502
Birch	72,469	21,235	25,998	2,760	5,016	17,459
Hickory	3,896	1,697	1	235	55	1,908
Beech	508	419	-	-	-	89
Ash	42,749	1,420	7,108	2,408	4,333	27,479
Locust	141	-	-	-	-	141
Walnut	5,046	-	-	478	4,568	-
Apple	619	12	*	7	9	591
Ironwood	2,582	83	2	47	30	2,420
Cottonwood	167	-	-	-	-	167
Aspen	73,739	17,334	28,530	17,570	3,738	6,567
Cherry	3,734	21	1	12	1,630	2,071
Oak	502,271	51,221	99,577	166,740	77,604	107,129
Willow	3,102	118	3	67	30	2,883
Basswood	3,715	1,870	1,069	35	-	741
Elm	55,060	12,013	4,136	9,927	10,399	18,585
Total hardwoods	972,855	167,208	231,879	240,349	119,620	213,798
All species	1,022,549	170,665	238,736	253,319	128,727	231,103

* Less than one-half cord.

Table 15. -- Residential fuelwood production from roundwood by species group and ownership class, Wisconsin, 1994

(In cords)

Species group	All ownerships	Ownership class					
		National Forest	Other federal	State	County/ municipal	Forest industry	Other private
Softwoods							
Fir	129	-	-	*	-	-	129
Cedar	3,881	-	-	5	-	-	3,876
Spruce	222	-	-	-	-	-	222
Pine	45,463	85	-	67	237	-	45,073
Total softwoods	49,694	85	-	72	237	-	49,300
Hardwoods							
Maple	191,608	3,719	490	1,728	19,716	1,353	164,601
Boxelder	11,448	*	-	3	6	-	11,437
Birch	72,469	1,436	133	1,092	7,648	452	61,707
Hickory	3,896	22	-	16	65	3	3,790
Beech	508	5	-	4	16	1	481
Ash	42,749	105	16	275	756	95	41,502
Locust	141	-	-	2	-	-	139
Walnut	5,046	-	-	-	26	-	5,020
Apple	619	*	-	*	*	-	619
Ironwood	2,582	1	-	2	1	-	2,579
Cottonwood	167	-	-	2	-	-	165
Aspen	73,739	476	47	2,192	2,591	148	68,286
Cherry	3,734	*	-	3	8	-	3,723
Oak	502,271	5,633	1,711	4,939	35,071	2,891	452,026
Willow	3,102	1	-	4	1	-	3,096
Basswood	3,715	55	1	20	132	11	3,497
Elm	55,060	380	-	201	1,333	86	53,061
Total hardwoods	972,855	11,833	2,398	10,486	67,370	5,040	875,728
All species	1,022,549	11,918	2,398	10,558	67,607	5,040	925,029

* Less than one-half cord.

Table 16. -- Residential fuelwood production from roundwood by ownership class and source of material, Wisconsin, 1994

(In cords)

Ownership class	All sources	Source of material					
		Cities and villages	Windbreaks, fencerows, rural yards	Pasture and cropland	Forest land		
					Standing live trees	Harvest residues	Dead trees
National forest	11,918	-	-	-	9,532	14	2,372
Other federal	2,398	-	-	-	2,398	-	-
State	10,558	-	-	-	7,294	872	2,392
County/municipal	67,607	-	-	-	49,203	11,885	6,519
Forest industry	5,040	-	-	-	5,034	-	6
Other private	925,029	43,540	38,401	8,365	258,677	120,963	455,082
Total	1,022,549	43,540	38,401	8,365	332,139	133,733	466,371

Table 17. -- Residential fuelwood production from roundwood by ownership class and Forest Survey Unit, Wisconsin, 1994

(In cords)

Ownership class	All Units	Forest Survey Unit				
		Northeastern	Northwestern	Central	Southwestern	Southeastern
National forest	11,918	5,347	6,572	-	-	-
Other federal	2,398	-	1,376	1,022	-	-
State	10,558	2,434	4,584	2,554	-	985
County/municipal	67,607	10,395	49,867	6,460	884	-
Forest industry	5,040	812	2,958	1,025	-	245
Other private	925,029	151,677	173,379	242,258	127,842	229,873
Total	1,022,549	170,665	238,736	253,319	128,727	231,103

Table 18. -- Distribution of timber removals associated with residential fuelwood production by Forest Survey Unit, Wisconsin, 1994

(In thousand cubic feet)

Forest Survey Unit	Timberland removals								Total timberland removals	Non-timberland removals	Total Removals
	Growing-stock removals			Non-growing-stock removals							
	Sawtimber	Poletimber	Total	Limbwood	Sapling	Cull trees	Dead trees	Total			
Northeastern	1,300	1,364	2,665	2,257	26	409	6,215	8,907	11,572	375	11,947
Northwestern	2,766	3,161	5,926	4,111	52	916	5,632	10,711	16,638	74	16,712
Central	1,991	2,465	4,456	2,454	34	694	8,558	11,741	16,197	1,536	17,732
Southwestern	1,037	1,164	2,202	1,598	20	340	4,340	6,298	8,500	511	9,011
Southeastern	983	939	1,921	1,963	21	305	8,141	10,430	12,351	3,826	16,177
Total	8,076	9,093	17,170	12,383	153	2,665	32,887	48,087	65,257	6,321	71,578

Table 19. -- Distribution of timber removals associated with residential fuelwood production by species group, Wisconsin, 1994

(In thousand cubic feet)

Species group	Timberland removals								Total timberland removals	Non-timberland removals	Total Removals
	Growing-stock removals			Non-growing-stock removals							
	Sawtimber	Poletimber	Total	Limbwood	Sapling	Cull trees	Dead trees	Total			
Softwoods											
Fir	*	*	*	*	*	*	9	9	9	-	9
Cedar	2	3	5	2	*	1	71	74	79	193	272
Spruce	4	5	9	4	*	1	2	7	16	-	16
Pine	384	363	747	775	8	113	1,390	2,287	3,034	148	3,182
Total softwoods	390	371	761	781	8	116	1,472	2,376	3,137	341	3,479
Hardwoods											
Maple	1,936	2,177	4,113	2,972	37	635	4,705	8,349	12,461	951	13,413
Boxelder	37	36	72	72	1	11	225	309	381	420	801
Birch	549	579	1,129	945	11	173	2,500	3,629	4,758	315	5,073
Hickory	11	12	22	17	*	3	166	186	209	64	273
Beech	7	5	11	17	*	2	5	24	36	-	36
Ash	184	197	381	311	4	58	1,436	1,809	2,190	803	2,992
Locust	3	4	6	3	*	1	*	4	10	-	10
Walnut	31	39	70	35	1	11	237	283	353	-	353
Apple	-	-	-	3	*	3	5	11	11	33	43
Ironwood	-	-	-	11	*	11	153	174	174	6	181
Cottonwood	3	4	7	3	*	1	*	4	12	-	12
Aspen	722	891	1,613	900	13	251	2,107	3,271	4,884	278	5,162
Cherry	22	25	47	36	*	7	79	122	169	92	261
Oak	3,928	4,484	8,413	5,851	73	1,301	17,062	24,287	32,700	2,459	35,159
Willow	12	14	26	18	*	4	104	126	152	65	217
Basswood	30	38	68	36	1	11	140	187	255	5	260
Elm	211	219	431	373	4	66	2,492	2,935	3,366	488	3,854
Total hardwoods	7,686	8,723	16,409	11,602	145	2,549	31,415	45,711	62,120	5,980	68,100
All species	8,076	9,093	17,170	12,383	153	2,665	32,887	48,087	65,257	6,321	71,578

* Less than 500 cubic feet.

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May, Dennis M.; Mace, Terry.
1996. **Residential fuelwood consumption and production in Wisconsin, 1994**. Resour. Bull. NC-172. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station. 29 p.

Reports findings of the latest survey of residential fuelwood consumption and production in Wisconsin. Topics examined include the geographic distribution of residential fuelwood consumption and production within the State; the species of trees used for residential fuelwood; the types of wood-burning facilities used; the reasons for burning fuelwood; and the land, ownership, and tree classes from which fuelwood was produced.

KEY WORDS: Fireplace, firewood, harvest, households, roundwood, wood stove.

Our job at the North Central Forest Experiment Station is discovering and creating new knowledge and technology in the field of natural resources and conveying this information to the people who can use it. As a new generation of forests emerges in our region, managers are confronted with two unique challenges: (1) Dealing with the great diversity in composition, quality, and ownership of the forests, and (2) Reconciling the conflicting demands of the people who use them. Helping the forest manager meet these challenges while protecting the environment is what research at North Central is all about.